Is Hawaii Swordfish Sustainable?

July 16, 2013 NOAA Symposium:

"*Eat Local, Think Global: A Case for US Fisheries*"

Oakland, California

Photo: John Kaneko

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Project (NOAA)

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Pure & Natural

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- 501(c)(3) Non Profit Organization
- Dedicated to supporting Hawaii's Responsible Fisheries and Sustainable Seafood…
- On issues of Seafood Safety, Seafood & Health and Sustainability…
- Thru Research, Outreach, Education and Branding.
- Supported by NOAA and others.

Hawaii longline-caught Swordfish is Sustainable…

- Based on how the Fishery is Managed
- Based on the Fish Stock Status
- Based on Control of Ecosystem Impacts
- Continual Fishery Improvement Process

Hawaii Longline Fishery

- The main commercial fishery in Hawaii
- 85% of all Hawaii commercial fish landings
- Two segments, bigeye tuna and swordfish
- 164 Limited Access Permits (active ~96 tuna, ~28 swordfish-tuna, ~40 inactive permits)

Photos: John Kaneko

US Swordfish in 2011

Rank	State	Metric Tons	% of US Total landings
1	HAWAII	1,175.7	30.5
2	FLORIDA	624.5	16.2
3	CALIFORNIA	618.6	16.1
4	NORTH CAROLINA	364.6	9.5
5	MASSACHUSETTS	335.9	8.7
6	SOUTH CAROLINA	335.9	8.7
7	LOUISIANA	165.3	4.3
8	NEW JERSEY	148.1	3.8
9	NEW YORK	75.2	2.0
10	RHODE ISLAND	10.1	0.3
	US TOTAL	3,853.9	

Source: NOAA Fishery Landings data
http://www.st.nmfs.noaa.gov/pls/webpls/MF_ANNUAL_LANDINGS.RESULTS

Brief History of Hawaii Longline Fishery

- 1914 - Hawaii Longline Fishery began with Japanese immigrant fishermen targeting tuna.
- 1988 - HLF was an open access fishery with 35 vessels.
- 1990-1991 - Targeted Swordfish Longline Fishery began.
- 1993 – Peak year, >13 million lbs landed, 60% of US SW.
- Over 90% of Hawaii swordfish is sold on the mainland, Boston is the major market.

Continual Fishery Improvement Process in Hawaii's Longline Fishery

What's the track record?

Management History of Hawaii Longline Fishery

- 1976 – Magnuson Stevens Fishery Management Act establishes the 8 Regional Fishery Management Councils (ex. West. Pac. RFMC)
- 1987 – Pelagic Fishery Management Plan (FMP) approved by NOAA.
- Management track record of continuous Fishery Improvement Process is documented in Amendments to FMP and strengthening of the science-based adaptive management system.
- 2001 -2004 – HI Swordfish Longline Fishery was closed due to legal actions taken intended to protect sea turtles.
- 2004 - Fishery was re-opened with new set of management requirements to protect sea turtles, many developed in the US Atlantic Swordfish fishery.

Factoid about Hawaii Longline Fishery

1991 - FIRST Pelagic Fishery in the US to implement a Limited Entry System (164 permits, ~125 active). No vessels over 101 ft allowed.

Growth of fleet size is capped. Uncontrolled growth in this fishery has been eliminated in Hawaii.

Factoid about Hawaii Longline Fishery

1991 – FIRST pelagic fishery in the US to require Mandatory Daily Vessel Logbook Reporting.

We know what our fishermen are doing at sea. We "trust but verify."

Factoid about Hawaii Longline Fishery

1993 - FIRST placed Fishery Observers on fishing vessels to monitor protected species interactions.

2004 - ***MOST*** *extensive Observer program in Pacific.*

Factoid about Hawaii Longline Fishery

2002- Mandatory >20% Observer coverage on Tuna Trips.

2004 – Mandatory 100% coverage of Swordfish Trips.

2012 - ***WCPFC goal*** *is >5% Observer coverage by 2012. Hawaii is way ahead of the rest.*

Factoid about Hawaii Longline Fishery

1993 – FIRST US fishery to require Vessel Monitoring Systems (VMS)

With satellite tracking 24/7 by NOAA, we know where our boats are at all times.

We can judge fish quality...

Photos: John Kaneko

How do we judge sustainability?

Photo: John Kaneko Honolulu Fish Auction

What do you need to know?

Who do you believe?

Who manages the Hawaii Swordfish Fishery?

- Managed by NOAA Pacific Islands Region and Western Pacific Fishery Management Council
- NOAA is the competent authority on the management of the Hawaii Longline Fishery.
- Managed under the Pacific Pelagic Fishery Ecosystem Plan (FEP) of the West. Pac. Region

Source: http://www.wpcouncil.org/fishery-plans-policies-reports/pelagics-fishery-management-plan/

We need to know that…

Sustainable Seafood comes from Responsible Fisheries

What is a Responsible Fishery?

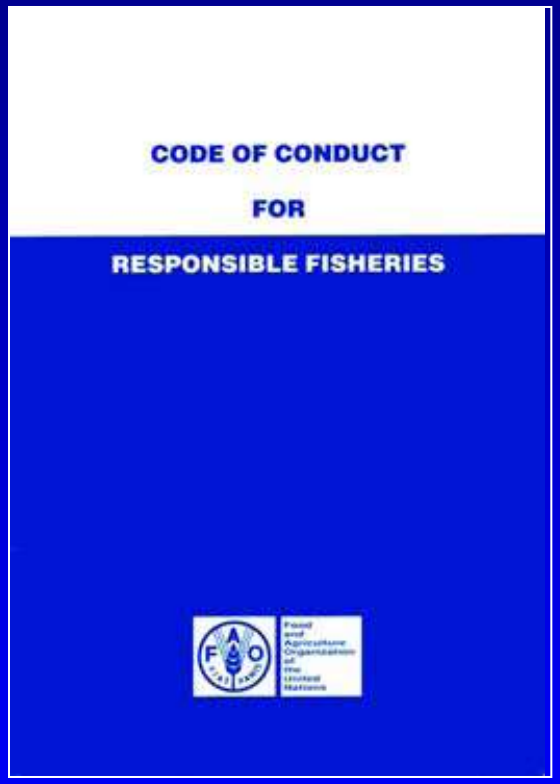
1. Well-managed for Sustainability.

2. Controls Overfishing.

3. Controls Ecosystem Impacts (ex. bycatch and protected species)

4. Continuous Fishery Improvement Process is central to the management system

Is there a Global Agreement on Responsible Fisheries?



- YES. The 1995 United Nations FAO Code of Conduct for Responsible Fisheries

- Prescribes what countries should have in place to develop responsible fisheries and manage them for sustainability.

FAO 1995. Code of Conduct for Responsible Fisheries
http://www.fao.org/docrep/005/v9878e/v9878e00.HTM

FAO Code of Conduct for Responsible Fisheries*

- In 2006, Hawaii's Longline Fishery was the first fishery to be assessed using a comprehensive application of the Code (according to FAO).

- Hawaii Longline Fishery assessment was used by the FAO as a case study for the application of the Code**.

*FAO, 1995. Code of Conduct for Responsible Fisheries
http://www.fao.org/docrep/005/v9878e/v9878e00

**Caddy, et al., 2007. Using questionnaires based on the FAO Code of Conduct for Responsible Fisheries as diagnostic tools in support of fisheries management.
http://www.fao.org/docrep/010/a1449e/a1449e00.htm

Responsible Fisheries Assessment (RFA) Summary Score for Hawaii Longline Fisheries

94% (in 2008)

(93% in 2006)

Bartram, P, K Nakamura , J Kaneko and G Krasnick. 2008. Responsible Fisheries Assessment of the Hawaii's Pelagic Longline Fisheries. NOAA NA06NMF4520222. p271.

Bartram, P, J Kaneko and G Krasnick. 2006. Responsible Fisheries Assessment of the Hawaii's Pelagic Longline Fisheries. NOAA NA05NMF451112. p232.

2008 RFA Results: Hawaii Longline Fisheries Scores for each Article

Fishery Management (Art. 7) = **96%** (109.5/114)

Fishing Operations (Art. 8) = **93%** (70/75)

Integration w/ CZM (Art. 10) = **71%** (17.5/21)

Post-harvest & Trade (Art. 11) = **95%** (38/40)

Fisheries Research (Art. 12) = **91%** (30.5/33)

Bartram, P, K Nakamura , J Kaneko and G Krasnick. 2008. Responsible Fisheries Assessment of the Hawaii's Pelagic Longline Fisheries. NOAA NA06NMF4520222. p271.

The Responsible Fisheries Assessment confirms that the NOAA management system…

1. Complies with the FAO Code of Conduct

2. Meets the 10 National Standards for Sustainable Fisheries Management which include,

Prevent overfishing while achieving optimum yield.

Use of the best scientific information available.

Minimize bycatch or mortality from bycatch.

Federal Management System for Hawaii Longline Fishery

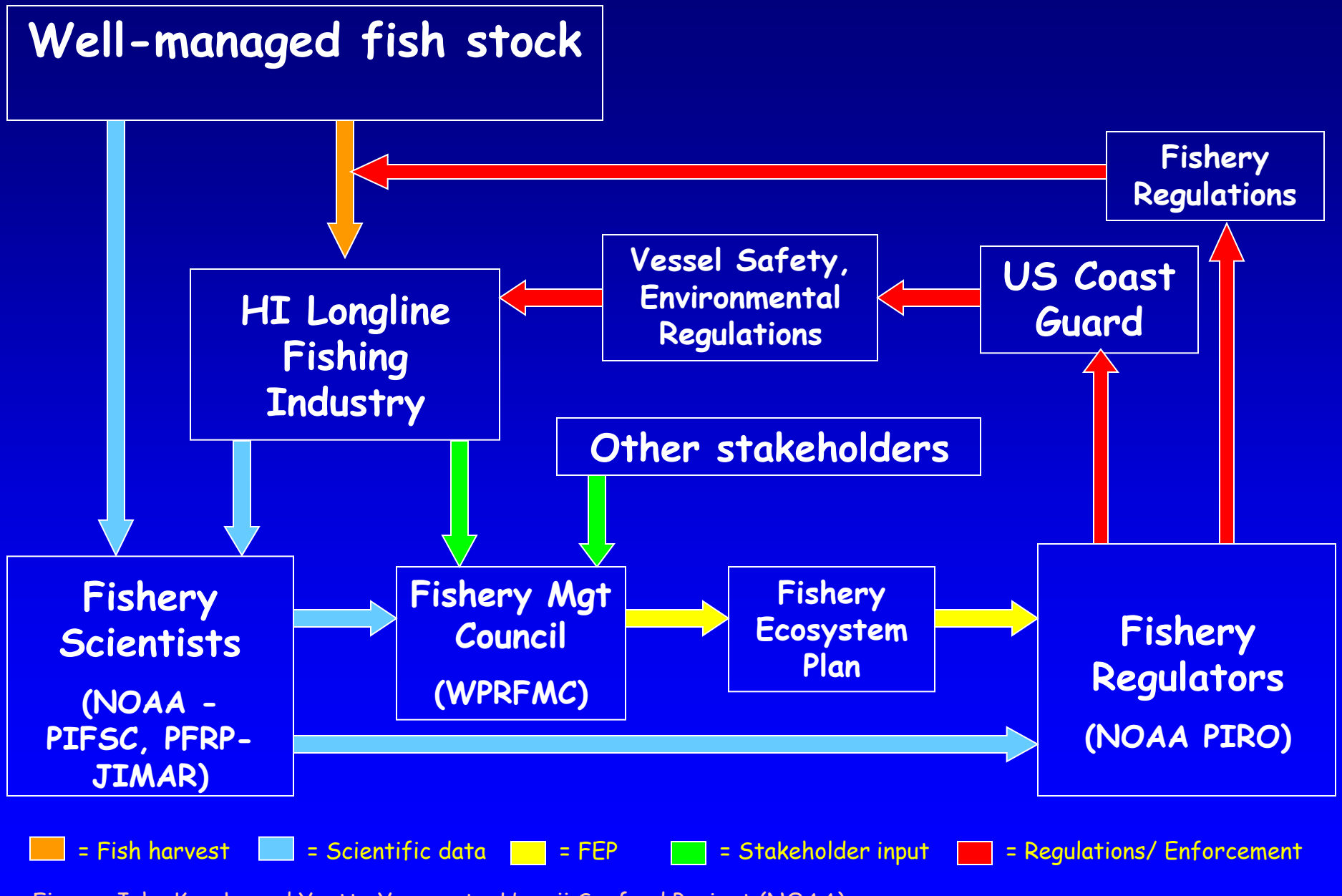


Figure: John Kaneko and Yvette Yamamoto, Hawaii Seafood Project (NOAA)

Conclusion: Responsible Fisheries Assessment

- YES. The fishery well-managed for sustainability?
- Fish Population Status? Rely on Fishery Stock Assessments (NOAA, WCPFC, IATTC)
- Ecosystem Impacts? Rely on research and monitoring of fishery reduction of Protected Species Interactions & Bycatch (NOAA, others)

NOAA Fish Watch website on Status of Hawaii SWORDFISH

- Population: Abundant (not overfished)
- Fishing Rate: Sustainable (overfishing not occurring)

Source: NOAA Fish Watch website. Accessed 7/5/2013.
http://www.nmfs.noaa.gov/fishwatch

NOAA Fish Watch website on Ecosystem Impacts of Hawaii SWORDFISH Fishery

- Habitat Impact: Minimal – all swordfish fishing gear are deployed in open water and do not contact seafloor.

- Bycatch: Varies based on gear type, location, and time of year. Sea turtles, marine mammals, seabirds, sharks, and other finfish can be incidentally caught in gillnet and pelagic longline fishing gear. U.S. fishermen follow a number of strict regulations, and have successfully reduced bycatch and bycatch mortality in these fisheries. Onboard observers and logbook requirements monitor these fisheries for any bycatch.

Source: NOAA Fish Watch website. Accessed 7/5/2013.
http://www.nmfs.noaa.gov/fishwatch

Example of Ecosystem Impacts: Sea Turtle interactions

- Fishery was reopened by NOAA in 2004 with new set of sea turtle conservation measures.
- Based on measures developed and implemented by NOAA to rebuild and reopen the Atlantic Swordfish fishery.
- Mandatory Protected Species Training for vessel operators. (annual requirement)
- Mandatory set of equipment on board to safely handle turtles, birds and marine mammals (ex. nets, de-hooking devices, etc.).

2004 Sea Turtle Measures continued..

- 100% Federal Observer Coverage on Swordfish trips.
- Shallow-set Swordfish longline effort capped at 2,120 sets.
- J-hooks and squid not allowed. Only large circle hooks and mackerel-type bait allowed.
- Annual Hard Cap on sea turtle interactions (maximum of 17 loggerheads or 16 leatherbacks) for the swordfish fleet. If either cap is reached, swordfish fishery closes in real time.

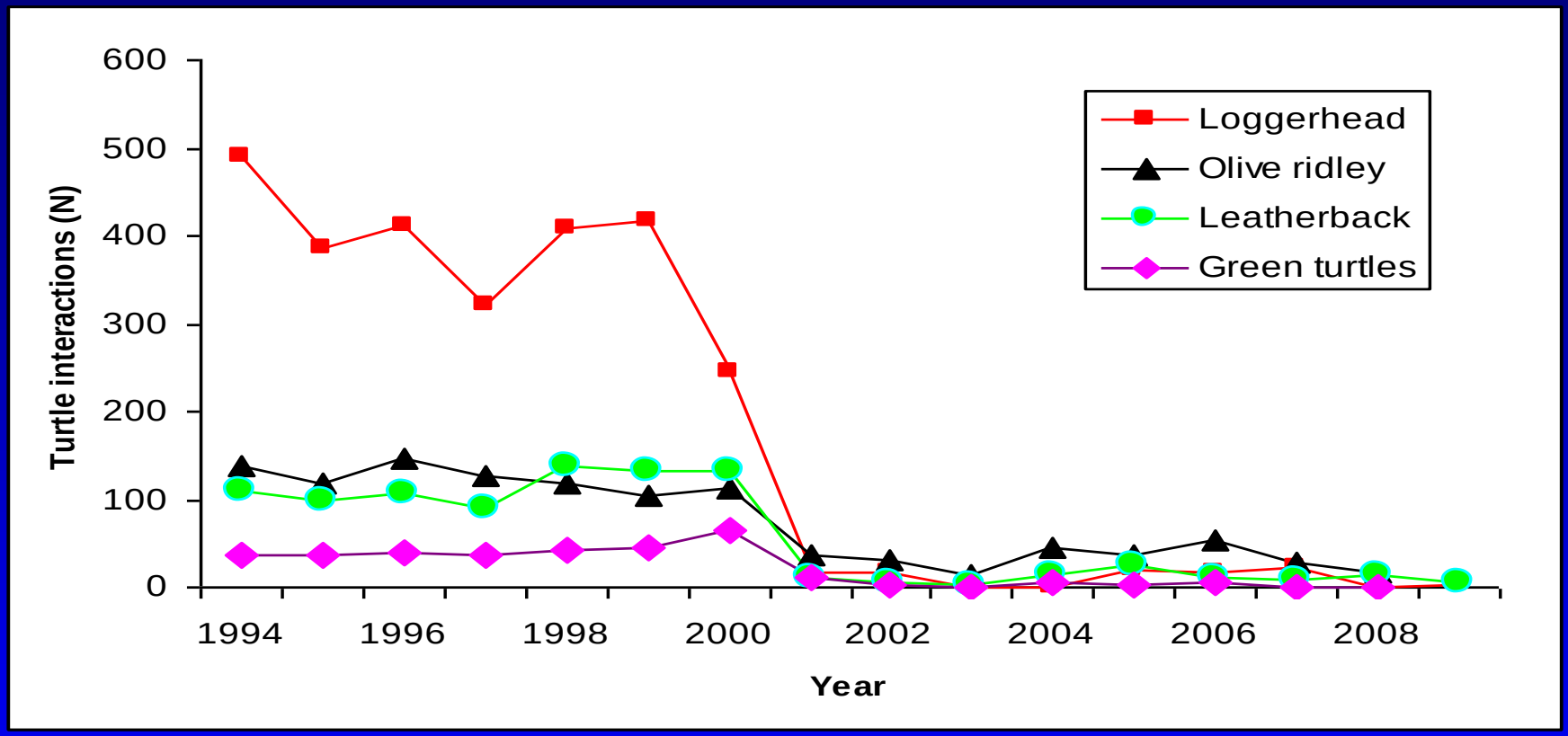
2012 Changes to Sea Turtle Conservation Measures

- Shallow-set Swordfish longline effort cap removed. (With 100% observer coverage and hard caps on turtle takes, this measure could not be justified.)

- Annual Hard Cap on sea turtle interactions increased to max of 34 loggerheads or 26 leatherbacks based on 2012 NOAA Biological Opinion for the Hawaii swordfish fishery.

Source: Federal Register Volume 77 Issue 193 (10/4/12)

Hawaii LL fishery: turtle interactions 1994-2009

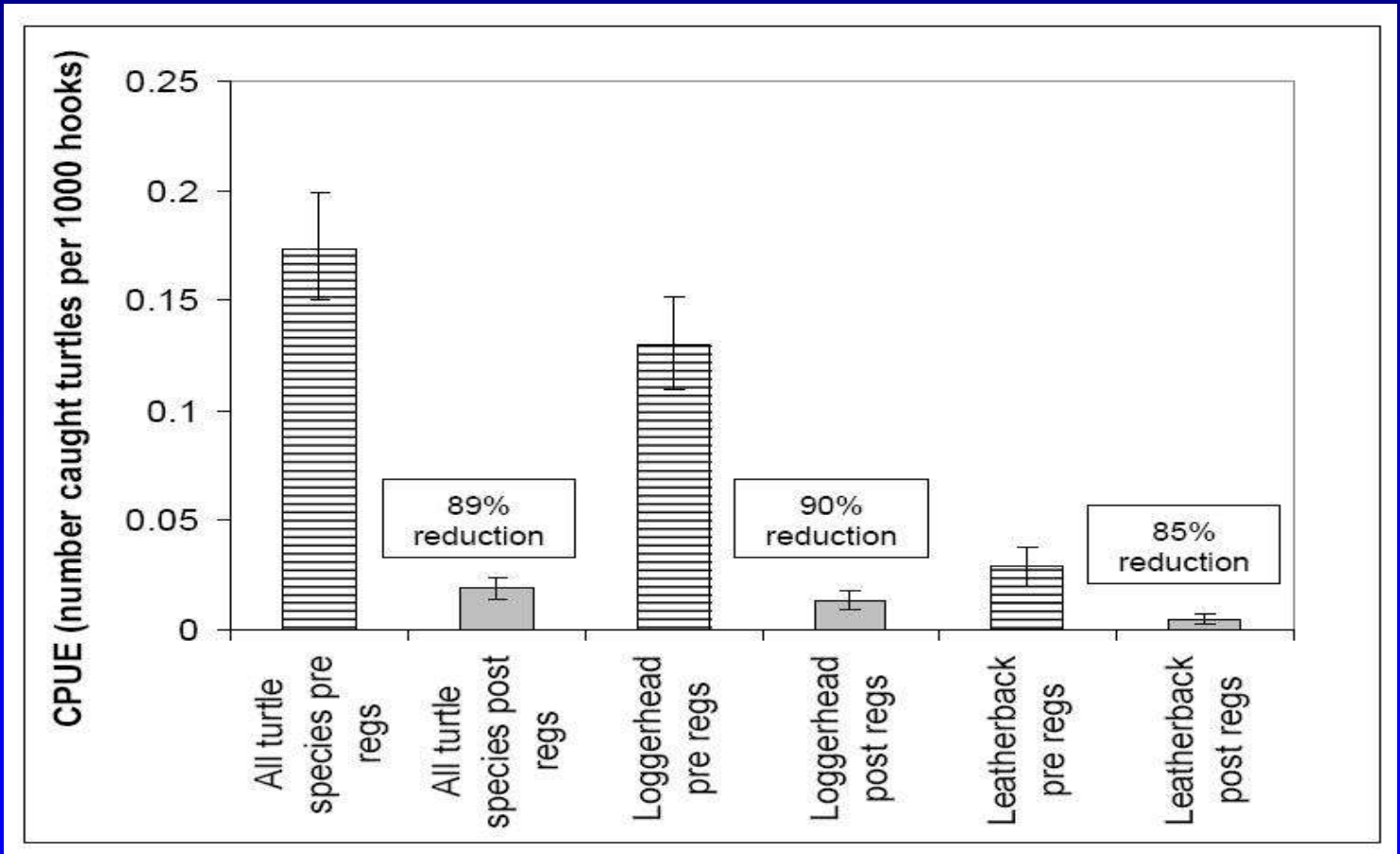


'94-'99: expanded from 5% observer coverage, deep and shallow sets
'00: expanded from 20% observer coverage, deep and shallow sets
'01 – '04: expanded from 20% coverage deep sets, sword fishery closed
'04 on: 20% coverage deep sets, 100% shallow sets, sword fishery re-opened

Source: West Pac Reg Fishery Mgt Council, 2009. NOAA PIRO data

How is the HI Swordfish Longline Fishery doing?

Sharp Reduction in Sea Turtle Interactions (BPUE) Pre (1994-1999) and Post Turtle Regs (2004-2007)



Loggerheads
pre = 0.13
post =0.0134

Leatherbacks
pre = 0.029
post =0.0044

Source: Gilman et al., 2007 Reducing sea turtle interactions in the Hawaii-based swordfish longline fishery. *Biol Conserv* 139 (2007) 19-28

Bycatch to Catch (B/C) Ratios

- Number of sea turtle (or other species) interactions per weight of fish harvested.

- Relates BPUE (bycatch per unit effort) with CPUE (fish catch per unit effort)

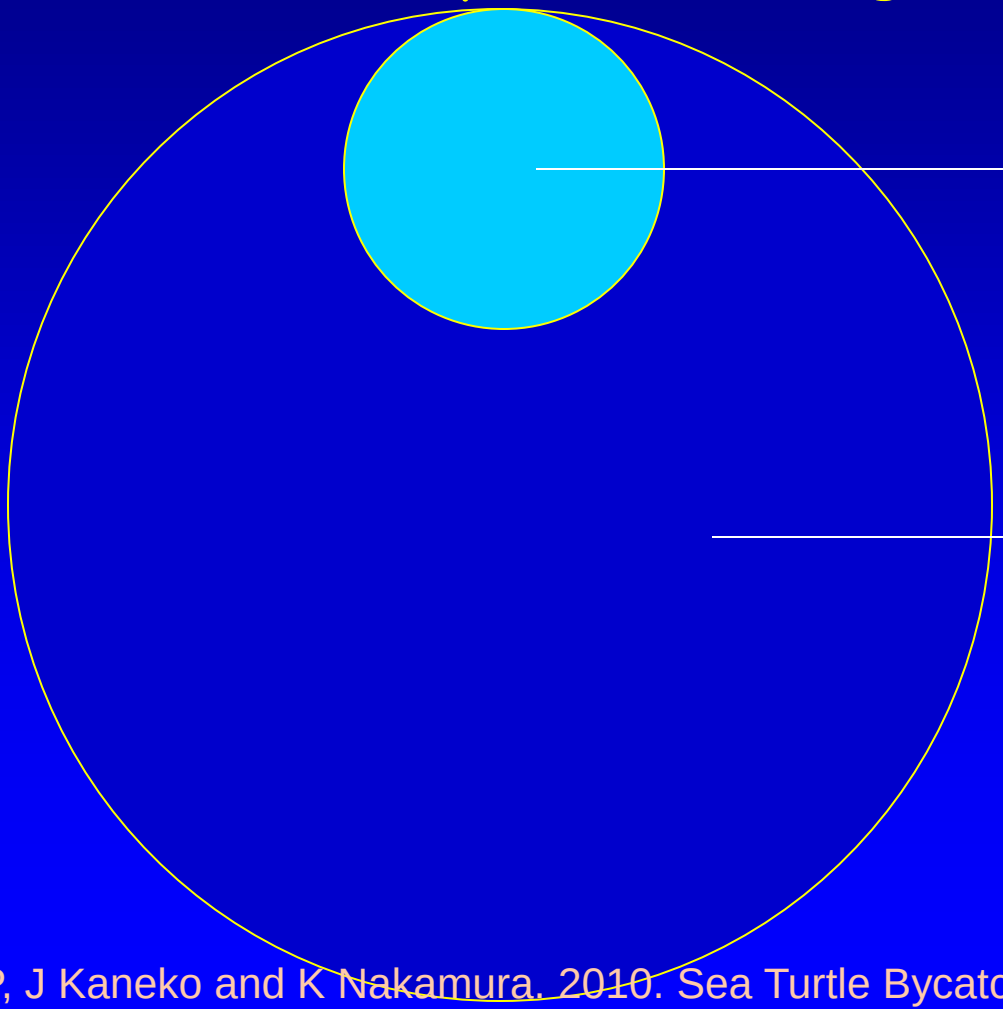
$$B/C = (BPUE/CPUE)$$

- B/C conceived by Dr. Martin Hall (IATTC) to evaluate performance of dolphin-safe purse seine methods

- Another way of comparing the sustainability of seafood produced by different fisheries and the net impact of product substitution (transfer effects) in the market.

Hawaii Swordfish Longline Fishery Bycatch to Catch Ratios before and after 2004 sea turtle interaction reduction measures

(sea turtle interactions per 190,000 kg of swordfish)



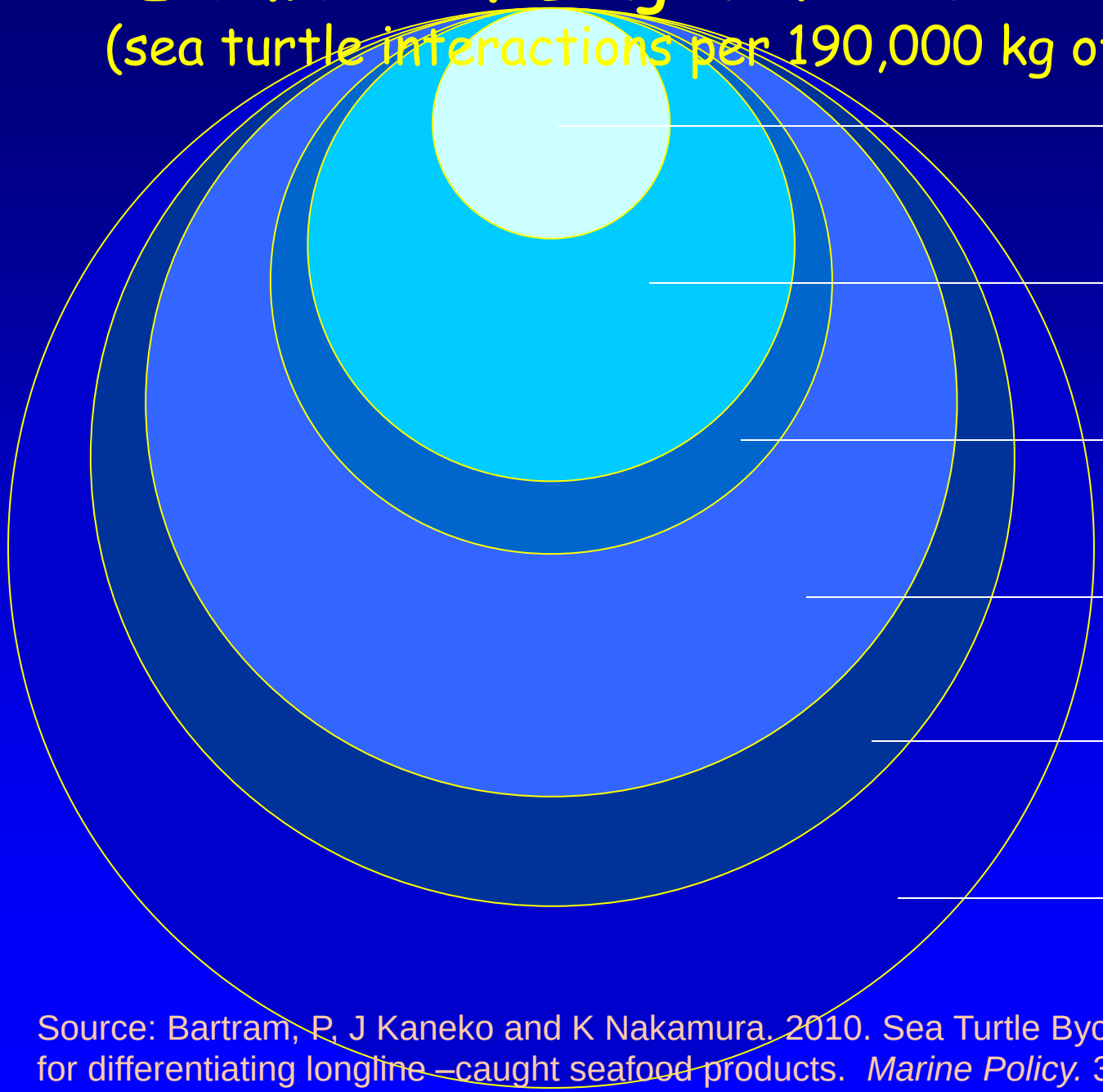
"AFTER"
Hawaii Swordfish
3.7 turtles

"BEFORE"
Hawaii Swordfish
32.2 turtles

Source: Bartram, P, J Kaneko and K Nakamura. 2010. Sea Turtle Bycatch to Catch ratios for differentiating longline –caught seafood products. *Marine Policy.* 34: 145-149.

Estimates of Longline Fisheries B/C Ratios

(sea turtle interactions per 190,000 kg of target fish)



Hawaii Tuna
1 turtle

Hawaii Swordfish
3.7 turtles

Japan Tuna
4.7 turtles

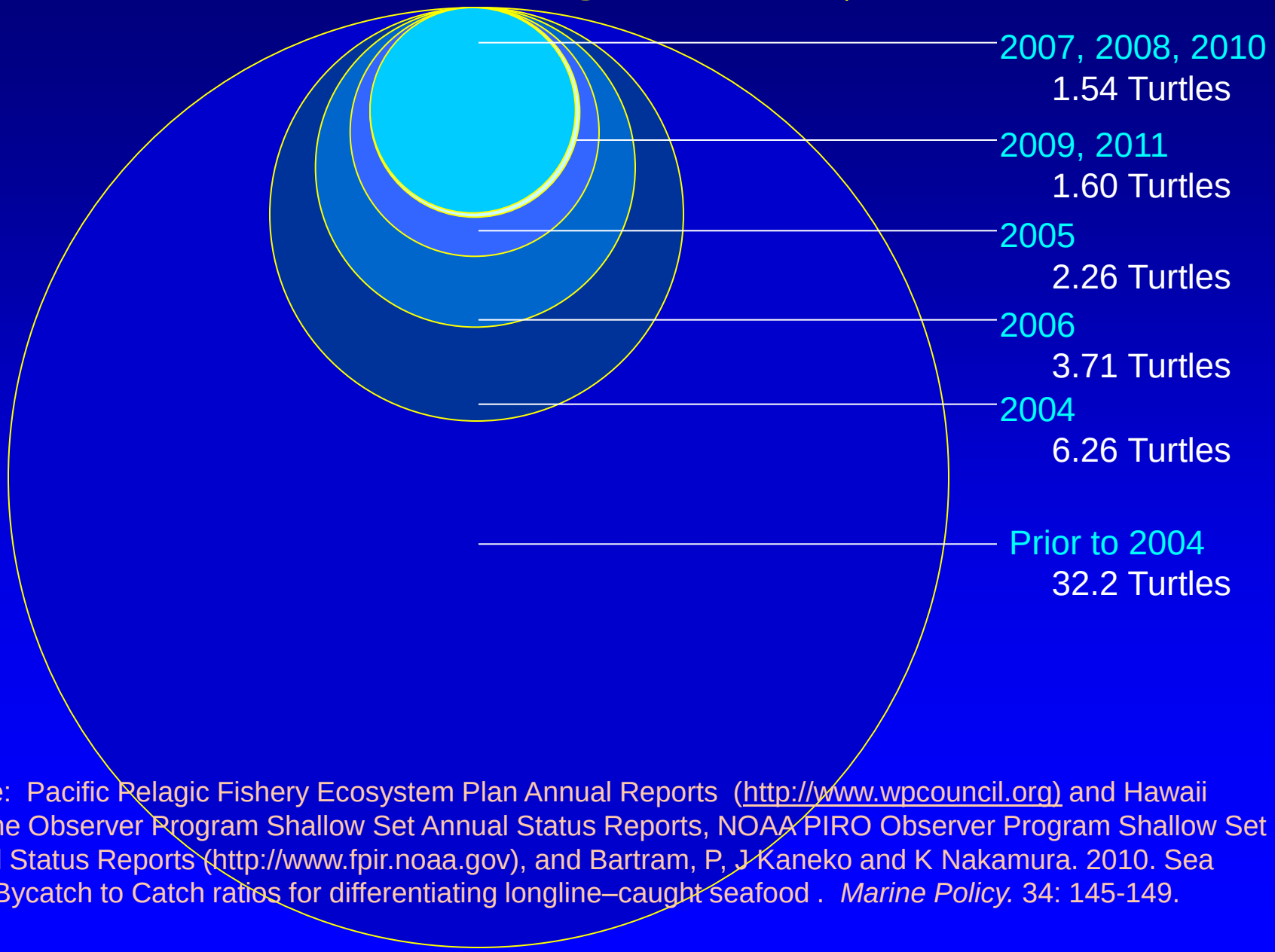
E. Australia Swordfish
9.5 turtles

Taiwan Tuna
13.7 turtles

China Tuna
19 turtles

Source: Bartram, P, J Kaneko and K Nakamura. 2010. Sea Turtle Bycatch to Catch ratios for differentiating longline –caught seafood products. *Marine Policy.* 34: 145-149.

Sea Turtle Bycatch per Swordfish Catch in the Hawaii Shallow-set Swordfish Longline Fishery 2004 to 2011



Source: Pacific Pelagic Fishery Ecosystem Plan Annual Reports (http://www.wpcouncil.org) and Hawaii Longline Observer Program Shallow Set Annual Status Reports, NOAA PIRO Observer Program Shallow Set Annual Status Reports (http://www.fpir.noaa.gov), and Bartram, P, J Kaneko and K Nakamura. 2010. Sea Turtle Bycatch to Catch ratios for differentiating longline–caught seafood . *Marine Policy.* 34: 145-149.

Is Hawaii longline-caught Swordfish Sustainable?

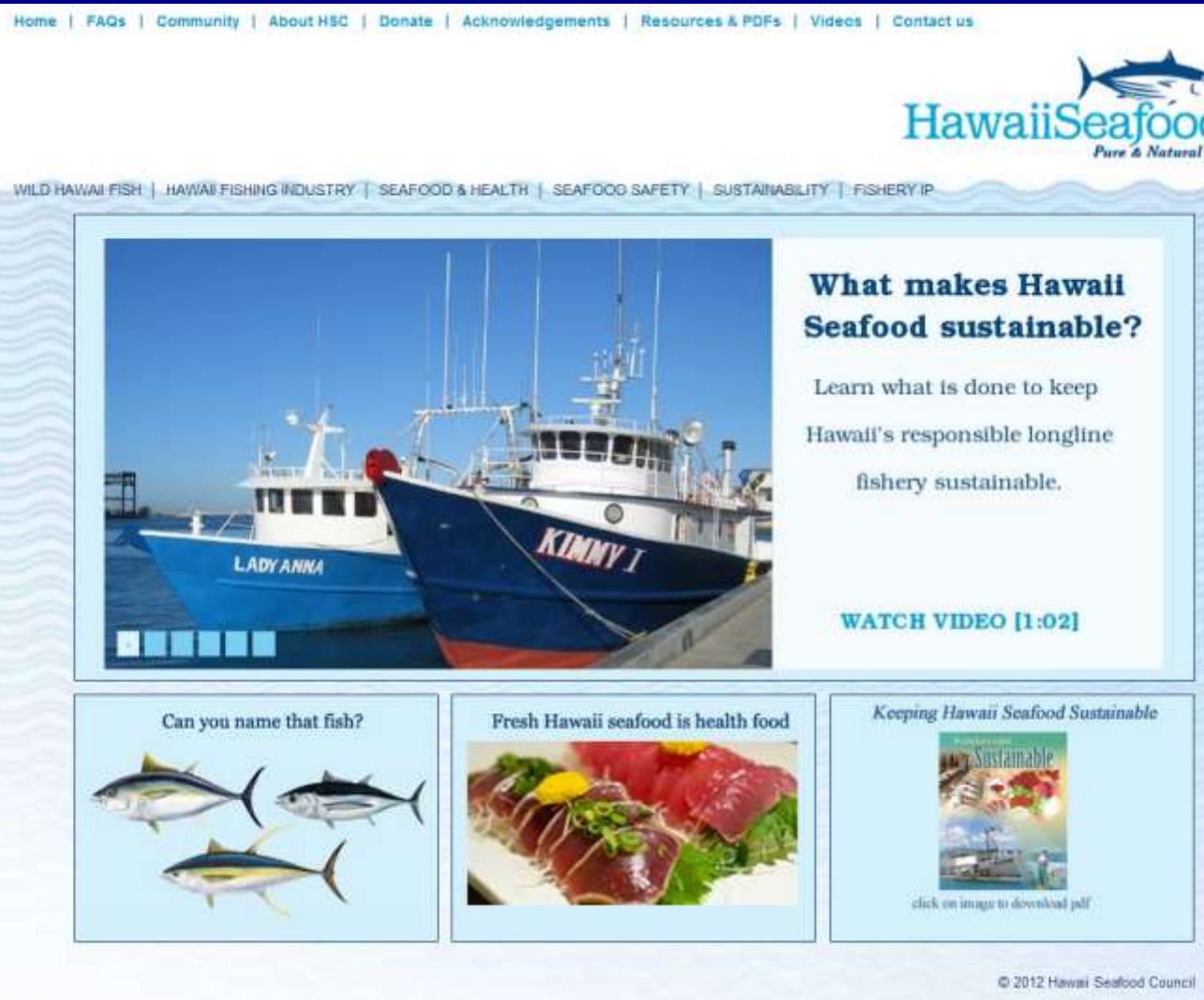
- YES. Based on Science-based Fishery Management by NOAA and high level of compliance with FAO Code of Conduct for Responsible Fisheries

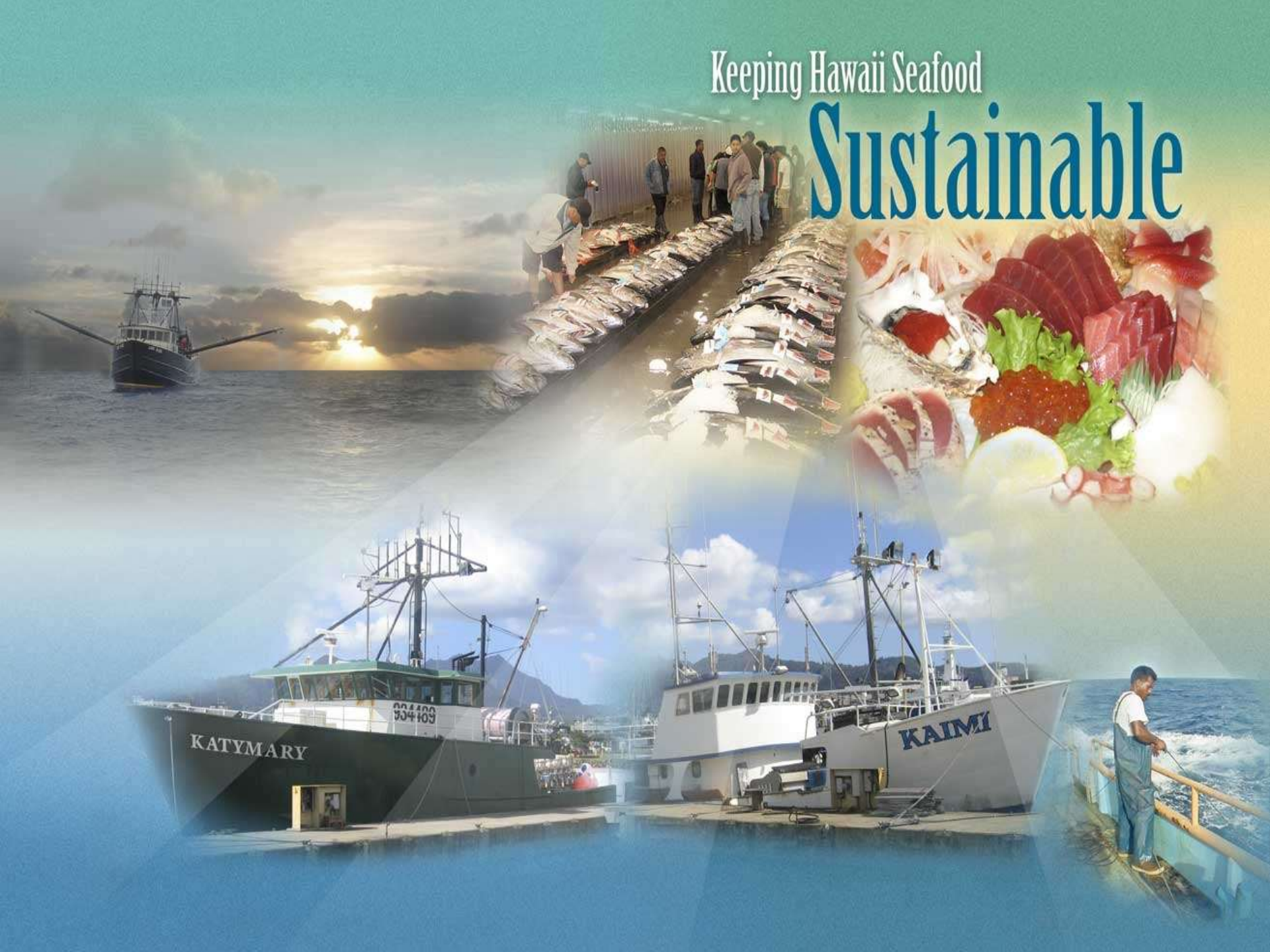
- YES. Based on Fish Stock Status determined by a group of highly-qualified stock assessment scientists

- YES. Based on continual improvement in control of Ecosystem Impacts

For more information…

www.hawaii-seafood.org




Keeping Hawaii Seafood
Sustainable
KATYMARY
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